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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,474	03/30/2004	Steven James Papapanu	DP-311453	3264

7590 09/20/2005

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EXAMINER

WALBERG, TERESA J

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,474

Applicant(s)

PAPAPANU, STEVEN JAMES

Examiner

Teresa J. Walberg

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/30/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsais (6,394,176) in view of Ozaki et al (6,213,196).

Marsais (see Fig. 1) discloses an integral primary and secondary heat exchanger of the cross flow type having a regularly spaced, parallel series of flow tubes (12a, 12b) with distinct fluids flowing through the primary and secondary tubes, a common external fluid flowing over the exterior surface of all tubes, each primary and secondary tube (12a, 12b) having adjacent internal flow passages (52, 56) with a respective pre determined internal web thickness (54, 58) between adjacent passages and a predetermined optimal internal passage flow size determined by flow characteristics of its internal fluid (col. 2, lines 18-20), each tube (12a, 12b) having a pre determined minimum perimeter wall thickness, the secondary tube having a tube thickness in which the internal passage flow height of the primary tube is less than that of the secondary tube (see Figs. 2 and 3) but in which it is desired to maintain the overall tube thickness of all tubes substantially equal (col. 4, lines 11-14), the primary tube (12b) including a series of flow passages (56) extending around and inboard of the perimeter thereof, each of which is spaced from the perimeter of the tube by its respective minimum

perimeter wall thickness and is also spaced from each adjacent flow passage by at least said pre determined web thickness (Fig. 3), so as to create an efficiently packaged array of flow passages within the primary tube (12b) while maintaining the constant overall tube thickness across all tubes (col. 4, lines 11-14), and the secondary flow tubes being an oil cooler (see Abstract line 2.

While Marsais states that the size of the flow passage is varied based on the flow characteristics, Marsais does not state that the size of the passage is varied by changing its height.

Ozaki et al teach varying the size of a flow passage by varying its height.

It would have been obvious in view of Ozaki et al to vary the height of the flow passages of Marsais, the motivation being to more easily determine the flow characteristics.

3. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsais (6,394,176) in view of Ozaki et al (6,213,196) as applied to claims 1 and 2 above and further in view of Kawakubo et al (2003/0066636).

Marsais in view of Ozaki et al, as discussed above, disclose an integral primary and secondary heat exchanger having the claimed structure with the exception of the internal flow passage height of the condenser tube being less than half that of the oil cooler tube, the condenser tube being arrayed with a double row of flow passages about the tube perimeter.

Kawakubo et al discloses the internal flow passage height of a tube being less than half the height of the tube and a tube including a double row of flow passages. See Fig. 4.

It would have been obvious in view of Kawakubo et al to provide the internal flow passage height of the condenser tube being less than half that of the oil cooler tube, whereby the condenser tube is arrayed with a double row of flow passages about the tube perimeter, and the condenser tubes being arranged in a single pass flow pattern between the manifold tanks in the heat exchanger of Marsais in view of Ozaki et al, the motivation being to more easily optimize the number and size of the flow passages.

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Halstead et al, Sugimoto et al, Shembekar et al, and Oh et al are cited to show heat exchanger tube structures.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on 571-272-4930. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Teresa J. Walberg
Primary Examiner
Art Unit 3753

tjw